WHAT IS CLAIMED IS:

1. - 9. (canceled)

10. (currently amended) A method for automatic identification of microorganisms collected on a carrier, which microorganisms are fungal spores and bacteria and are airborne or present in water, the method comprising the steps of:

a) recording at least one color image of a carrier surface with collected microorganisms with a digital device with image enlargement that digitalizes[[;]]

~~b) digitalizing~~ the at least one color image to a digitalized color image so that for further processing immediately a digitalized image of the carrier surface with the microorganisms is available;

[[c)]] b) converting on a computing platform the digitalized color image into a grayscale image and optionally converting subsequently the grayscale image into a silhouette image and producing ~~, wherein~~, when microorganisms are present on the carrier, an image ~~is produced~~ with resulting full-surface labeled objects, representing the microorganisms, of a first grayscale and a background of a different second grayscale;

[[d)]] c) comparing the objects to models by a model-based comparative method in order to identify ~~identifying objects as~~ identified objects and unidentified objects in at least one of the grayscale image and ~~and/or~~ in the silhouette image ~~by a model-based comparative method~~;

[[e)]] d) marking contours of the identified objects in the at least one of the color image and ~~and/or~~ in the grayscale image;

[[f)]] e) determining at least one feature of the identified objects in the at least one of the color image and ~~and/or~~ in the grayscale image;

[[g)]] f) classifying case-by-case the identified objects based on the at least one feature as classified objects with a classification system;

g) counting all the objects to determine a count of the identified objects and of the non-classified unidentified objects;

h) indicating on a display; saving in a memory; or indicating on the display and ~~and/or~~ saving in the memory the classified objects as at least one of species; ~~and/or~~ name; ~~and/or~~ and code together with the count of the classified objects; ~~and~~

i) indicating on the display; saving in the memory; or indicating on the display

and ~~and/or~~ saving in the memory the ~~at least one~~ non-classified, unidentified objects ~~object, if present~~, as at least one of a color image; ~~and/or~~ grayscale image; ~~and/or~~ and silhouette image together with the count and subsequently discarding the ~~, wherein at least one~~ non-classified, unidentified objects ~~object is subsequently discarded~~ or ~~added~~ adding the non-classified, unidentified objects as a new case with determined class in the classification system;

j) separating overlapping objects in the color image or in the grayscale image by performing a first image analysis and removing the overlapping objects from the color image or the grayscale image and saving the overlapping objects as a first partial image;

k) separating by a second image analysis the overlapping objects of the first partial image from one another and saving the separated overlapping objects as second partial images;

l) determining features of the separated overlapping objects and, by comparison with saved and identified objects of the classification system, identifying supplemented objects and supplementing missing areas caused by overlap;

m) indicating on the display; saving in the memory; or indicating on the display and saving in the memory the identified separated objects of the step k), the supplemented objects of the step l), and a level of congruence between the supplemented objects of step l) and the correlated saved and identified objects of the classification system.

11. (canceled)

12. (canceled)

13. (previously presented) The method according to claim 10, further comprising the step of purging ~~wherein~~, after the step of digitalizing, errors ~~are purged~~ from the color image of the carrier surface and standardizing the color image [[is]] subsequently ~~standardized~~ by image preprocessing.

14. (previously presented) The method according to claim 10, wherein the at least one feature is a shape, a texture or a structure of the identified objects in the at least one of the color image ~~and/or~~ and the grayscale image.

15. (canceled)

16. (previously presented) The method according to claim 10, ~~wherein~~

recording in the step of recording the color image of the carrier surface ~~is recorded~~ at least once two-dimensionally or ~~and/or~~ sterically ~~and/or~~ or three-dimensionally.

17. (currently amended) The method according to claim 10, further comprising the step of dyeing ~~dying~~ the carrier surface prior to recording the color image of the carrier surface.

18. (currently amended) The method according to claim 10, further comprising the steps of:

dyeing the carrier surface after the step of recording the at least one color image of the carrier surface;

recording at least one additional color image of the dyed carrier surface; and

~~digitalized~~ digitalizing the at least one additional color image and performing; ~~wherein~~ the steps [[c)]] b) to i) ~~are performed~~ for the at least one color image of the carrier surface recorded before the step of dyeing and for the at least one additional image of the dyed carrier surface.

19. (new) The method according to claim 10, comprising the step of triggering an alarm when a threshold value for the count of identified objects is surpassed or a certain species is identified.

20. (new) The method according to claim 10, comprising the step of outputting the results of the steps h), i) and m) as a documentation of microorganism loading.